CLAIMS

1.   A recording apparatus which time-divides a stream of continuous video or audio signals into a first stream and a second stream, records the first stream on a first recording medium as a first file, and records the second stream on a second recording medium as a second file, wherein

first management information related to the second file or the second recording medium is recorded on the first recording medium in association with the first file, or

second management information related to the first file or the first recording medium is recorded on the second recording medium in association with the second file.

2.   A recording apparatus which time-divides a stream of continuous video signals and a stream of continuous audio signals into a first video stream and a first audio stream synchronized with each other and a second video stream and a second audio stream synchronized with each other, records the first video stream and the first audio stream on a first recording medium as a first video file and a first audio file, respectively, and records the second video stream and the second audio stream on a second recording medium as a second video file and a second audio file, respectively, wherein

first management information related to the second video file, the second audio file, or the second recording medium is recorded on the first recording medium in association with the first video file and the audio file, or

second management information related to the first video file, the first

audio file, or the first recording medium is recorded on the second recording medium in association with the second video file and the second audio file.

3.   The recording apparatus according to claim 2, wherein recording end time of the first video file and recording end time of the first audio file are caused to coincide with each other, and recording start time of the second video file and recording start time of the second audio file are caused to coincide with each other.

4.   The recording apparatus according to claim 2 or 3, wherein, when a frame frequency of the video signals is different from a sample frequency of the audio signals, the video signals and the audio signals are synchronized with each other in association with audio signals the number of which is a predetermined number of samples every predetermined number of frames.

5.   The recording apparatus according to any one of claims 1 to 4, wherein the first or second management information is written in a management information file.

6.   The recording apparatus according to any one of claims 1 to 5, wherein the first management information related to the second recording medium or the second management information related to the first recording medium includes ID information which specifies a recording medium.

7.   The recording apparatus according to claim 4, wherein a sequence

number of a head frame of recording start of the first or second file is recorded on the first or second management information file.

8.   The recording apparatus according to claim 2, wherein, when the video signals are MPEG-compressed video signals, increases in file size Dt of the first video file and the first audio file at the end of 2 continuous GOPs are predicated by the following equation at the start of each GOP, a recordable remaining capacity of the first recording medium is compared with the Dt, and it is determined that destination recording media are switched when the remaining capacity is smaller than the Dt:

Dt = (Da x 2M) + ((Rmax/Fnum) x 2M)

M: the number of frames of one GOP

Da: Audio data size in one frame unit

Rmax: maximum rate (Max rate) of MPEG in VBR

Fnum: frame frequency.

9.   The recording apparatus according to claim 1, wherein, when the video signals are MPEG-compressed signals, the stream of the video signals is time-divided immediately before the head of a GOP.

10.   A recording apparatus comprising:

        stream dividing unit which time-divides a stream of continuous video or audio signals into a first stream and a second stream;

        a first recording drive which stores a first recording medium therein to record the first stream on the first recording medium as a first file;

a second recording drive which stores a second recording medium therein to record the second stream on the second recording medium as a second file; and

a control unit which transmits first management information related to the

5   second file or the second recording medium to the first recording drive to record the first management information on the first recording medium in association with the first file, or transmits second management information related to the first file or the first recording medium to the second recording drive to record the second management information on the second recording medium in

10   association with the second file.

11.   The recording apparatus according to any one of claims 1 to 10, wherein the first management information is related to a manufacture code number, being unique to a medium, for specifying the second recording medium, and the

15   second management information is related to a manufacture code number, being unique to a medium, for specifying the first recording medium.

12.   A recording method comprising:

time-dividing a stream of continuous video or audio signals into a first

20   stream and a second stream;

recording the first stream on a first recording medium as a first file;

recording the second stream on a second recording medium as a second file; and

recording first management information related to the second file or the

25   second recording medium on the first recording medium in association with the

first file or recording second management information related to the first file or the first recording medium on the second recording medium in association with the second file.

5 13.   The recording method comprising:

time-dividing a stream of continuous video signals and a stream of continuous audio signals into a first video stream and a first audio stream synchronized with each other and a second video stream and a second audio stream synchronized with each other;

10   recording the first video stream and the first audio stream on a first recording medium as a first video file and a first audio file, respectively;

recording the second video stream and the second audio stream on a second recording medium as a second video file and a first audio file, respectively; and

15   recording first management information related to second video file, the second audio file, or the second recording medium on the first recording medium in association with the first video file and the first audio file; or

recording second management information related to the first video file, the first audio file, or the first recording medium on the second recording medium in association with the second video file and the second audio file.

14.   The recording method according to claim 13, wherein, when the video signals are MPEG-compressed video signals, increases in file size Dt of the first video file and the first audio file at the end of 2 continuous GOPs are predicated by the following equation at the start of each GOP, a recordable remaining

capacity of the first recording medium is compared with the Dt, and it is determined that destination recording media are switched when the remaining capacity is smaller than the Dt:

$$Dt = (Da \times 2M) + ((Rmax/Fnum) \times 2M)$$

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M: the number of frames of one GOP

Da: Audio data size in one frame unit

Rmax: maximum rate (Max rate) of MPEG in VBR

Fnum: frame frequency.

10   15.   The recording method according to any one of claims 12 to 14, wherein the destination recording medium is switched from the first recording medium to the second recording medium.

16.   A recording method comprising:

15   sequentially recording streams of continuous video or audio signals on a first recording medium as a first file;

sequentially recording parts subsequent to the first file in the streams on a second recording medium as a second file; and

recording first management information related to the second recording

20   medium on the first recording medium in association with the first file.

17.   The recording method according to claim 16, further comprising the step of recording second management information related to the first recording medium on the second recording medium in association with the second file.

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18. A recording method comprising:

sequentially recording streams of continuous video or audio signals on a first recording medium as a first file;

sequentially recording parts subsequent to the first file in the streams on a second recording medium as a second file; and

recording second management information related to the first recording medium on the second recording medium in association with the second file.

19. The recording method according to any one of claims 16 to 18, further comprising:

deciding whether the destination recording medium is switched from the first recording medium to the second recording medium; and

switching the destination recording medium from the first recording medium to the second recording medium.

20. A recording method comprising:

sequentially recording streams of continuous video and audio signals on a first recording medium as a first video file and a first audio file synchronized with each other;

sequentially recording parts subsequent to the first video and audio files in the streams on a second recording medium as a second video file and a second audio file synchronized with each other; and

recording first management information which specifies the second recording medium on the first recording medium in association with the first video and audio files.

21. The recording method according to claim 20, further comprising the step of recording second management information which specifies the first recording medium on the second recording medium in association with the second video

5 and audio files.

22. A recording method comprising:

sequentially recording streams of continuous video and audio signals on a first recording medium as a first video file and a first audio file synchronized

10 with each other;

sequentially recording parts subsequent to the first video and audio files in the streams on a second recording medium as a second video file and a second audio file synchronized with each other; and

recording second management information which specifies the first

15 recording medium on the second recording medium in association with the second video and audio files.

23. The recording method according to any one of claims 16 to 21, further comprising:

20 deciding whether the destination recording medium is switched from the first recording medium to the second recording medium; and

switching the destination recording medium from the first recording medium to the second recording medium.

25 24. The recording method according to any one of claims 12, 13, 15 to 21,

and 23, wherein the first management information is related to a manufacture code number, being unique to a medium, for specifying the second recording medium.

5   25.   The recording method according to any one of claims 12 to 16, 18, 19, and 21 to 23, wherein the second management information is related to a manufacture code number, being unique to a medium, for specifying the first recording medium.

10   26.   A recording program which causes a computer to execute:

time-dividing a stream of continuous video or audio signals into a first stream and a second stream;

recording the first stream on a first recording medium as a first file;

recording the second stream on a second recording medium as a second

15   file;

recording first management information related to the second file or the second recording medium on the first recording medium in association with the first file; and

recording second management information related to the first file or the

20   first recording medium on the second recording medium in association with the second file.

27.   A recording program according to claim 26 which causes a computer to further execute switching the destination recording medium from the first

25   recording medium to the second recording medium.

28.   A recording program which causes a computer to execute:

sequentially recording streams of continuous video or audio signals on a first recording medium as a first file;

5   sequentially recording parts subsequent to the first file in the streams on a second recording medium as a second file;

recording first management information related to the second file or the second recording medium on the first recording medium in association with the first file; and

10   recording second management information related to the first file or the first recording medium on the second recording medium in association with the second file.

29.   The recording program according to claim 28 which causes a computer

15   to further execute:

deciding whether the destination recording medium is switched from the first recording medium to the second recording medium; and

switching the destination recording medium from the first recording medium to the second recording medium.

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30.   The recording program according to any one of claims 26 to 29, wherein the first management information is related to a manufacture code number, being unique to a medium, for specifying the second recording medium, and the second management information is related to a manufacture code number,

25   being unique to a medium, for specifying the first recording medium.

31.   A computer readable recording medium on which the recording program according to any one of claims 26 to 30 is recorded.

5   32.   A reproducing apparatus on which a plurality of recording media are loaded and which reproduces a plurality of video files or audio files recorded on the recording media, wherein

when a first video or audio file recorded on a first recording medium is to be reproduced, first management information related to a second video or audio

10   file to be reproduced subsequently to the first video or audio file recorded on the first recording medium is read to specify a second recording medium on which the second video or audio file is recorded, and

subsequently to the first video or audio file, the second video or audio file is read from the second recording medium and continuously reproduced.

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33.   A reproducing apparatus on which a plurality of recording media are loaded and which reproduces a plurality of video files or audio files recorded on the recording media, wherein

when a first video or audio file recorded on a first recording medium is to

20   be reproduced, first management information related to a second video or audio file to be reproduced subsequently to the first video or audio file recorded on the first recording medium is read to specify a second recording medium on which the second video or audio file is recorded, and

when the second recording medium is not loaded, first management

25   information related to the second video or audio file is displayed.

34.   A reproducing apparatus on which a plurality of recording media are loaded and which reproduces a plurality of video files or audio files recorded on the recording media, wherein

5   management information files recorded on the recording media are read and analyzed to form an order of video or audio files recorded on the recording media and constituting one series of continuous video or audio streams,

one series of continuous video or audio streams recorded on the recording media are displayed to accept a designation of a stream to be

10   reproduced, and

the video or audio files are read from the recording media in the order of forming the video or audio streams and continuously reproduced depending on the accepted reproducing designation.

15   35.   A reproducing apparatus comprising:

first and second drives in which a first recording medium on which a first stream obtained by time-dividing a stream of continuous video or audio signals into a first stream and a second stream is recorded as a first file and a second recording medium on which the second stream is recorded as a second file are

20   stored;

management information acquiring unit which acquires first management information related to files previous to and next to the first file from the first recording medium, and acquires second management information related to files previous to or next to the second file from the second recording medium;

25   management information processing unit which forms an order of files

which continue to constitute one series of streams on the basis of the first management information and the second management information;

display unit which displays a combination of continuous streams recorded on the recording media;

5   input unit which inputs selection of a stream to be reproduced from the combination of streams; and

reproducing unit which continuously reproduces the files in the order of the files to constitute the streams depending on the input.

10   36.   A recording medium which is a first recording medium of a first recording medium on which a first file constituted by a first stream obtained by time-dividing a stream of continuous video or audio signals into a first stream and a second stream is recorded, and a second recording medium on which a second file constituted by the second stream is recorded, wherein

15   the first file and

first management information related to the second file the second recording medium are recorded, wherein the first management information is related to the first file.

20   37.   The recording medium according to claim 36, wherein the first management information is related to a manufacture code number, being unique to a medium, for specifying the second recording medium.

38.   A recording medium which is a second recording medium of a first recording medium on which a first file constituted by a first stream obtained by

time-dividing a stream of continuous video or audio signals into a first stream and a second stream is recorded, and a second recording medium on which a second file constituted by the second stream is recorded, wherein

the second file and

5   second management information related to the first file or the first recording medium are recorded, wherein the second management information is related to the second file.

39.   The recording medium according to claim 38, wherein the second

10   management information is related to a manufacture code number, being unique to a medium, for specifying the first recording medium.